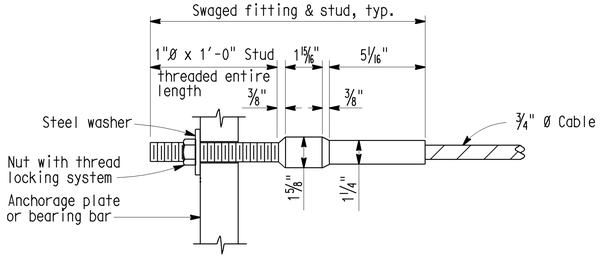
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT	SHEET NO.	TOTAL SHEETS

REGISTERED ENGINEER - CIVIL

REGISTERED PROFESSIONAL ENGINEER — No. ____ Exp. ____ CIVIL — STATE OF CALIFORNIA

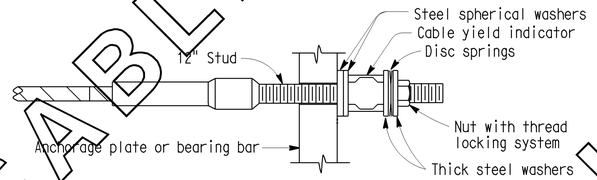
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.



FIXED END (TYPICAL BRACKET ANCHOR)

(Single-end adjustment restrainer units)



ADJUSTMENT END

CABLE END ANCHORAGE DETAILS

NO SCALE

Note: For locations of fixed and adjusted ends, see Structure Plans

DISC SPRINGS AND WASHERS

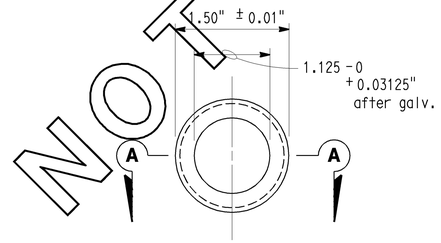
"All dimensions in inches, except as noted"

L*	DISC SPRING ID	DISC SPRING OD	DISC SPRING †	DISC SPRING H	DISC SPRING COLOR CODE	STEEL SPHERICAL WASHER ID	STEEL SPHERICAL WASHER OD	STEEL SPHERICAL WASHER Nom. thick.	THICK WASHER ID	THICK WASHER OD	THICK WASHER †**
00.0 - 25.0	1.00	2.00	0.065	0.130	WHITE	1.19	2.25	0.50	1.03	2.00	0.25
25.1 - 31.9	1.00	2.00	0.084	0.136	RED	1.19	2.25	0.50	1.03	2.00	0.25
32.0 - 37.9	1.00	2.00	0.097	0.145	BLUE	1.19	2.25	0.50	1.03	2.00	0.25
38.0 - 45.0	1.25	2.50	0.120	0.180	YELLOW	1.31	2.50	0.50	1.16	2.00	0.25

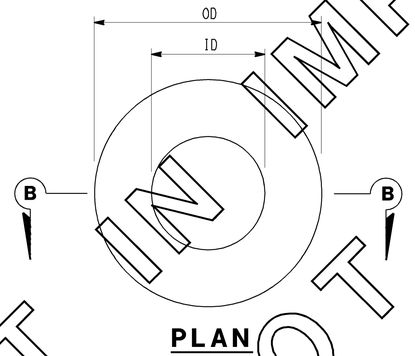
* For limits of length L (ft), use effective length of cable, from face-to-face outer surfaces of anchorage plate or bearing bar. Refer to Bridge detail sheets for approximate length required.

** Minimum value

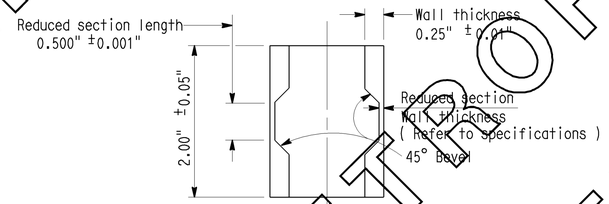
Note: All OD and ID dimensions for washers and disc springs shall meet the dimensional tolerances for harden steel washers, ASTM F436



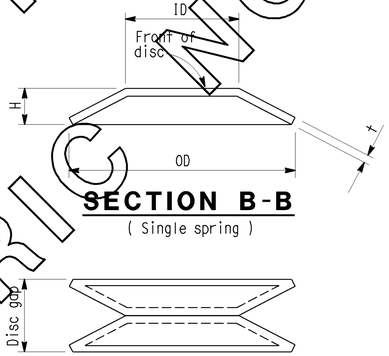
END VIEW



PLAN



SECTION A-A



SECTION B-B

(Single spring)

AS INSTALLED ON STUD

"All dimensions are before galvanizing except as noted"

CABLE YIELD INDICATOR

DISC SPRING

Note: For dimensions not shown, see table

RESTRAINER UNIT INSTALLATION PROCEDURE

1a. For typical 'girder to opposite girder' or 'bent cap to girder' restrainers with one adjustment end:

Place nut, washer and Thread Locking System on fixed end stud prior to tightening the cable.

The adjustment end shall be at the same end of the cable for all restrainers at a specific hinge or bent.

Install Cable Yield Indicator, spherical washers, disc springs, washers and nut on the adjustment end of restrainers as shown in "Cable End Anchorage Details". Discs shall be installed front to front as shown in "Disc Spring" detail.

Tighten the nuts on the cable from the Adjustment End of restrainer until the disc springs collapse and there is no disc gap remaining between the discs.

1b. For typical "U" or "V" shaped restrainers units with two adjustment ends: Install Cable Yield Indicator, spherical washers, disc springs, washers and nuts on both adjustment ends of restrainer as shown in "Cable End Anchorage Details".

Discs shall be installed front to front as shown in "Disc Spring" detail.

The ends of the cable must be adjusted simultaneously. Tighten the nuts on the cable from the adjustment ends of restrainer until the disc springs collapse and there is no disc gap remaining between the discs on either end of the cable.

2. Place thread locking system on adjustment end(s) after tightening the cable but before backing off the nut(s).

Back off the nut(s) at the adjustable anchorage(s) a distance equal to the maximum additional amount that the hinge is expected to open,relative to existing ambient conditions, as shown on the plans for movement rating.

STANDARD DRAWING

RELEASE DATE	4/20/98					
FILE NO.	xs7-710-2	DESIGN	BY S. SAHS	CHECKED R.J. ZELINSKI	RELEASED BY	
		DETAILS	BY S. SAHS	CHECKED R.J. ZELINSKI		
		SUBMITTED	BY R.J. ZELINSKI	DRAWING DATE 4/98	OFFICE CHIEF	

DS OSD 2147A (CADD 7/97)

ORIGINAL SCALE IN INCHES FOR REDUCED PLANS 0 1 2 3

STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION

DIVISION OF ENGINEERING SERVICES

CU EA

BRIDGE NO.

POST MILE

RESTRAINER UNIT - MISCELLANEOUS DETAILS

DISREGARD PRINTS BEARING EARLIER REVISION DATES →

REVISION DATES (PRELIMINARY STAGE ONLY) | SHEET | OF

DATE PLOTTED => 16-JAN-2004 TIME PLOTTED => 15:32

USERNAME => jsanchez

xs7-710-2.dgn